Message

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Subject: STICS: Clearance Initiation: #ORD-015803: Advancing the State-of-the-Science in Estimating Cancer Risk of Polycyclic Aromatic Hydrocarbon Mixtures

This e-mail is to inform you that you have been copied on the following Human Health Risk Assessment clearance submission in STICS:

- **Product type, subtype:** Presentations and Technical Summaries, Poster
- **Product title:** Advancing the State-of-the-Science in Estimating Cancer Risk of Polycyclic Aromatic Hydrocarbon Mixtures
- **Author(s):** Pratt, M,H. Carlson-Lynch,L. Flowers,M. Gehlhaus,P. McClure,J. Melia,G. Rice,L. Teuschler and K. Hogan
- **Initiator:** Margaret Pratt,ord/ncea/iris
- **ORD Tracking Number:** Tracking # ORD-015803
- **Product Description / Abstract:** Cancer risk assessment for exposures to mixtures of polycyclic aromatic hydrocarbons (PAHs) poses particular challenges because tumor data on specific mixtures of concern are rarely available. In lieu of mixture-specific data, one alternative has been the relative potency factor (RPF) approach, which scales the doses of each PAH in a mixture to an index chemical, i.e., benzo[a]pyrene (BaP). A limitation of this approach is the small number of carcinogenic PAHs for which RPFs have been derived (6 in 1993 EPA guidance). Commenting on the 2010 draft PAH Relative Potency Factor (RPF) Approach, EPA's Science Advisory Board (SAB) stated that an RPF approach remains the most practical approach until mixtures of concern can be tested. Being responsive to the SAB's recommendations, EPA's IRIS Program has advanced the state-of the-science for developing PAH RPFs through a systematic review of the literature reporting tumor data on individual PAHs, then focusing on bioassays with environmentally relevant routes of exposure and tumor responses $\leq$ 90%. Many tumor studies did not meet these criteria, or were conducted without concurrent BaP. Approaches that expand the usable database for estimating RPFs include using earlier time points and, in the absence of BaP, using concurrently tested PAHs as intermediate index chemicals. Characterization of uncertainty includes quantification of variability across studies and sensitivity analyses to evaluate the impact of data choices (e.g., incidence vs. multiplicity) and modeling strategies. Despite the use of these innovative approaches, there remains a critical need for data that are better suited for the estimation of cancer risk from exposure to PAHs, both for the more practical RPF approach in the near term and, ultimately, for whole PAH mixtures. (The views expressed are those of the authors and do not necessarily reflect the views or policies of the U.S. EPA).
- **Tracking and Planning**
  - Task: Scientific Manuscripts Addressing IRIS Issues
  - Product:
  - Project: Integrated Risk Information System (IRIS)
  - Science Question:
  - Topic: Integrated Risk Information System (IRIS)

- Theme:
- Research Program Area: Human Health Risk Assessment

- **HISA? ISI? High Profile?:** High Profile and/or Policy Relevant (not HISA or ISI)
- **QA form attached in STICS?:** No
- **QAPP Reference:** N/A
- **Keywords:**
  - polycyclic aromatic hydrocarbons
  - mixtures
  - cancer
  - relative potency

- **Meeting Information:**
  - Meeting Name: Society of Toxicology Annual Meeting
  - Meeting Start Date: 03/12/2016
  - Meeting End Date: 03/17/2016

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